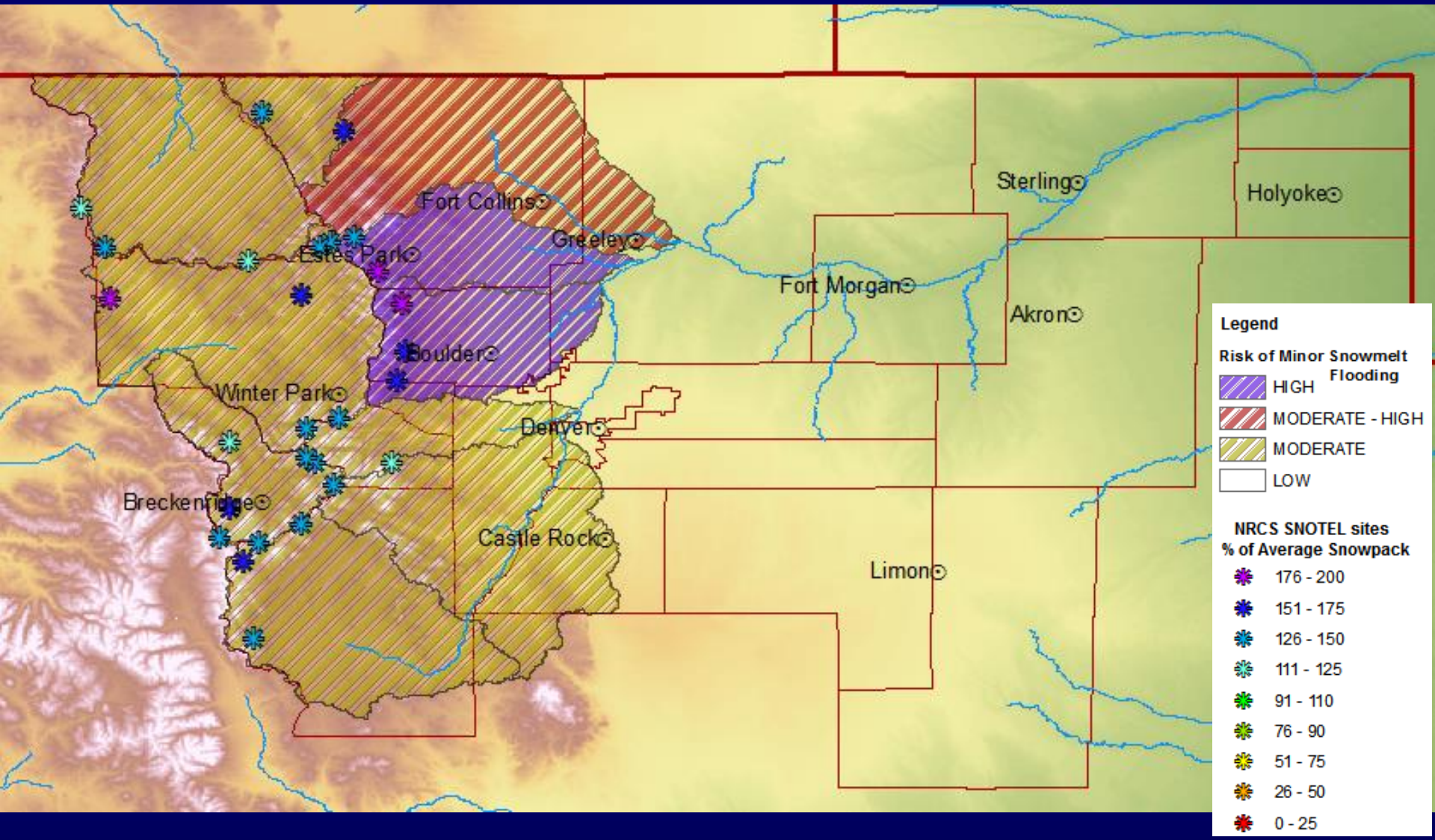
Spring Snowmelt Flood Potential Outlook

North Central & Northeast Colorado

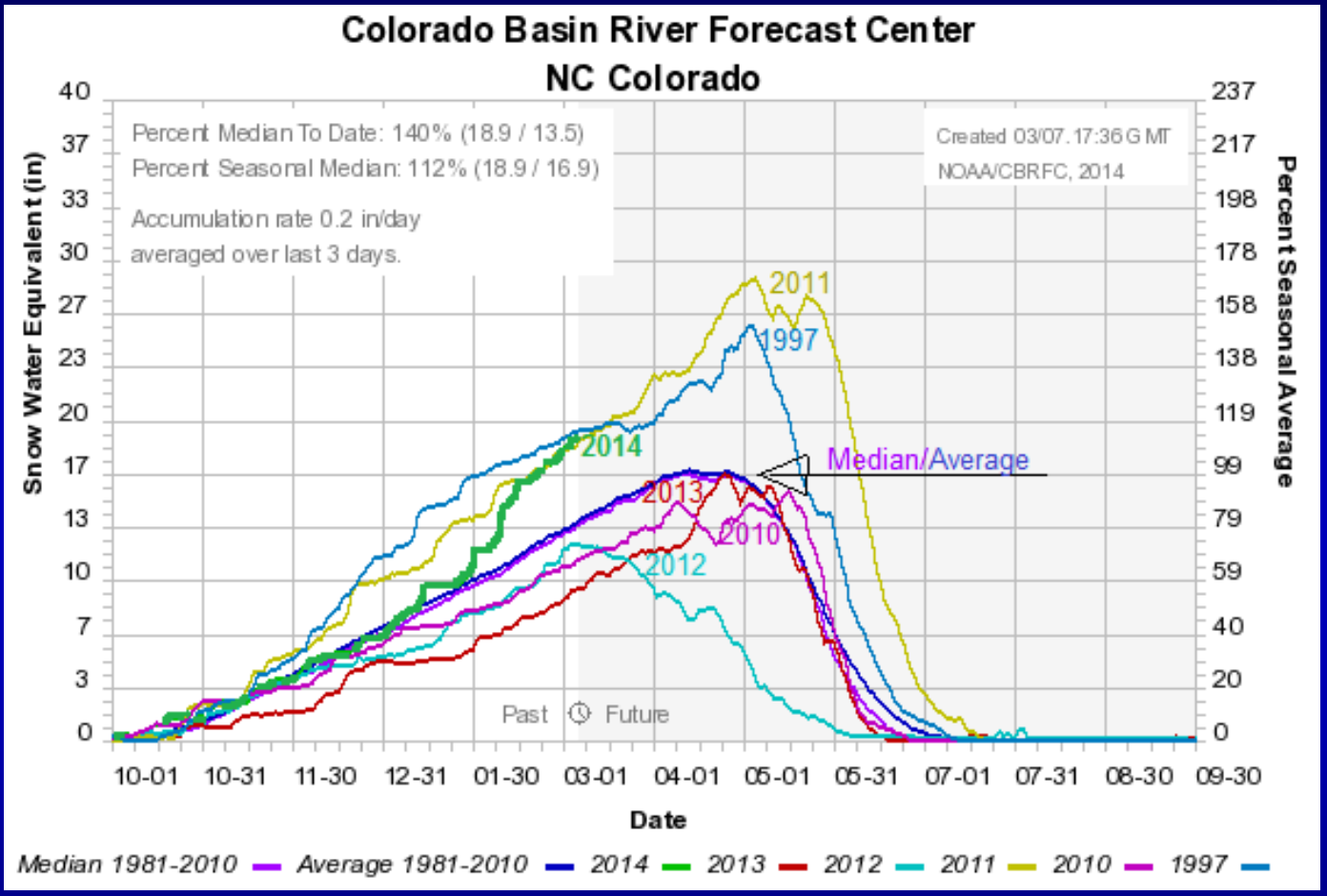
The chance of flooding from to snowmelt this spring is elevated. The potential for minor flooding this spring is moderate to high in the higher terrain of the South Platte Basin, and moderate in the headwaters of the Upper Colorado and North Platte Rivers.

Spring Snowmelt Flood Potential Outlook Graphic

March 6th, 2014



Snowpack

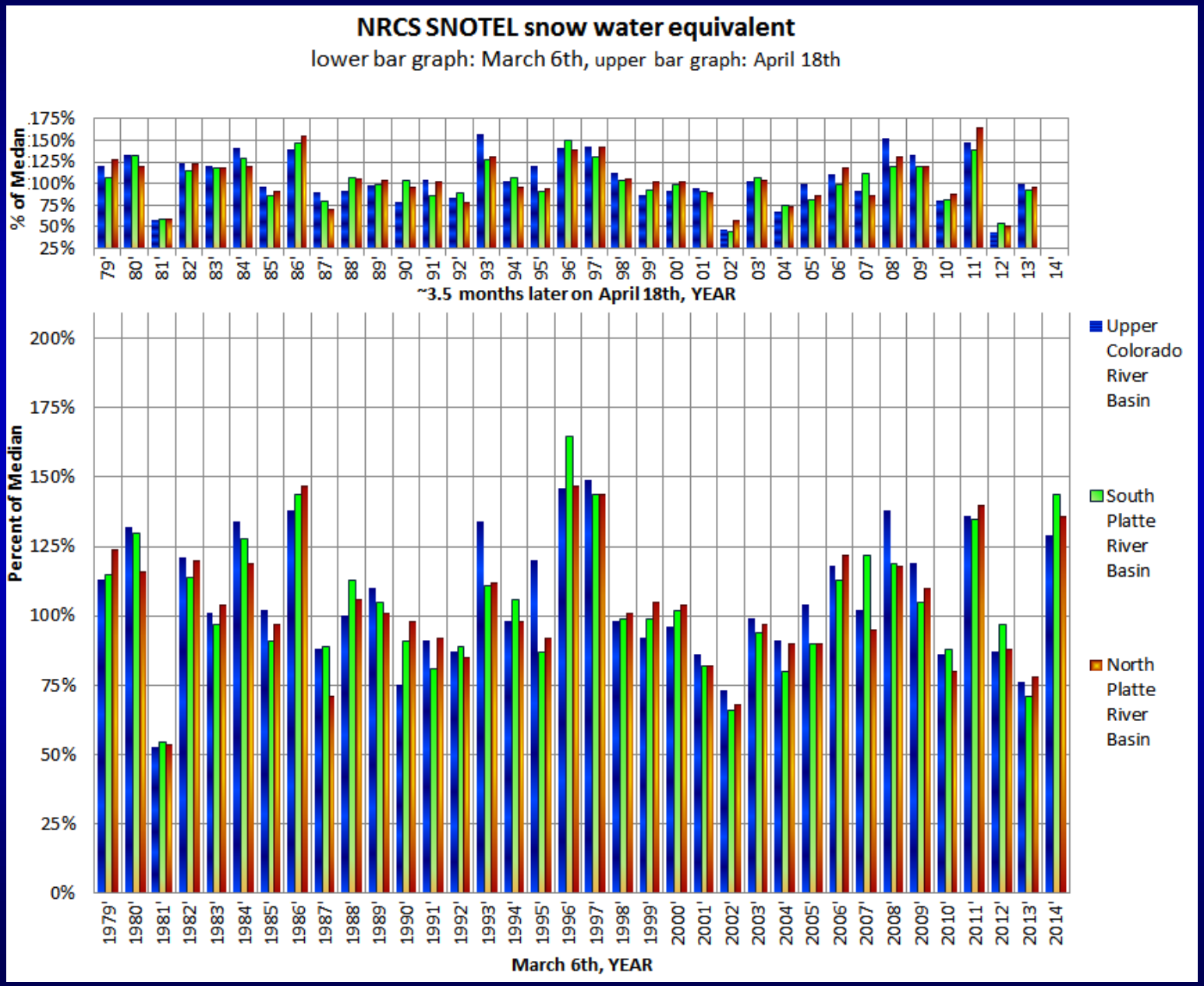


- Mountain snowpack remains above to much above average with near record snowpack observed at several locations near the Continental Divide. The current high country snowpack is already near the typical seasonal peak values. Approximately 20 percent of the snow accumulation season remains.

*** SNOTEL data for this graph provided by the NRCS.**

Additional time series graphs can be produced on the Colorado Basin RFC website at: http://www.cbrfc.noaa.gov/station/sweplot/snowgroup.php

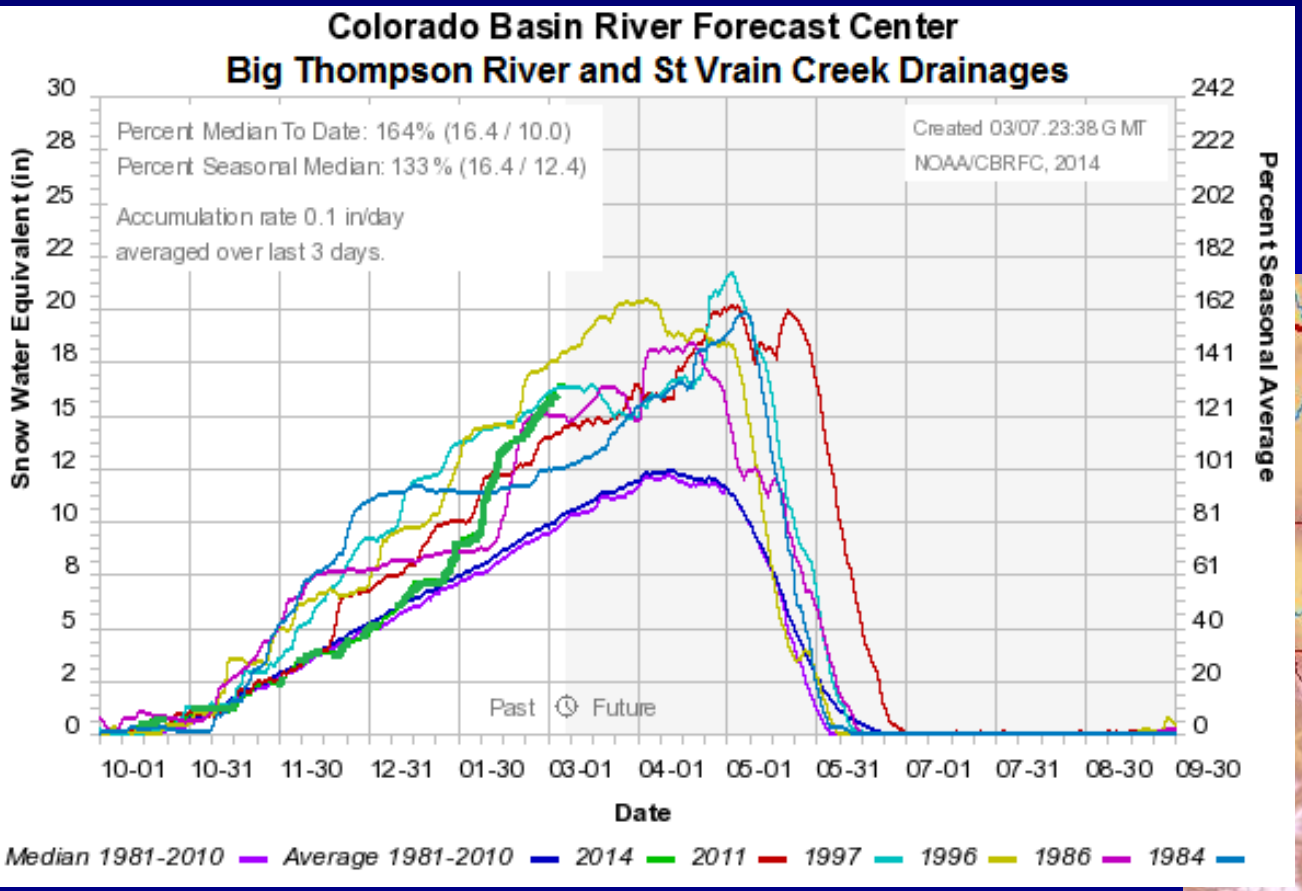
The early March % of average mountain snowpack in the South Platte River Basin this year is similar to the high snowpack in 1986, 1997, 2011 but remains below the snowpack in March 1996.

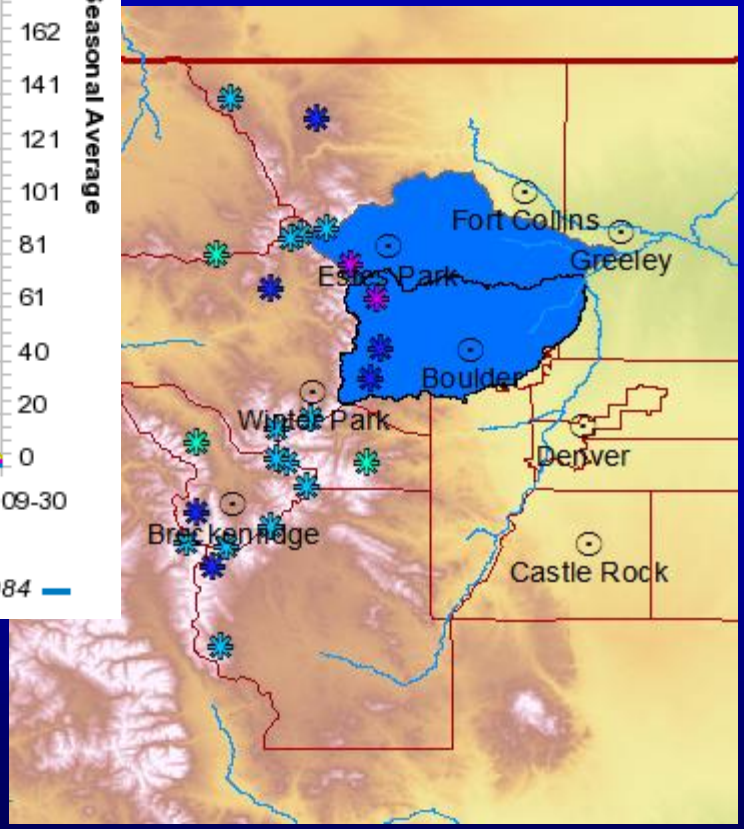


Additional spring snowmelt runoff concerns in areas severely impacted by September 2013 floods

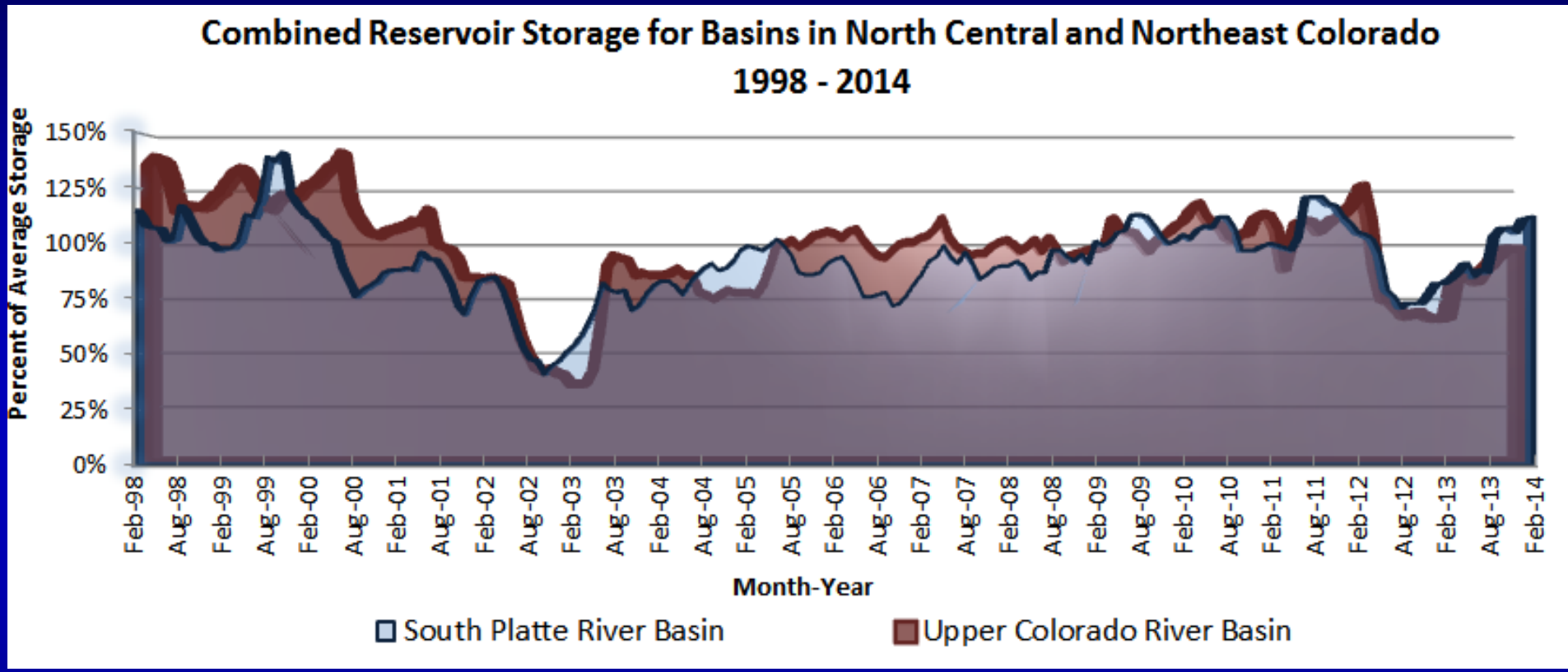
- Residents in areas where stream channels have moved or significant debris and sedimentation has occurred (particularly in the Front Range foothills in Boulder, Larimer, and northern Jefferson Counties) should be prepared for localized spring snowmelt flooding.
- A small amount of water could start moving large quantities of sediment in affected streams. Debris flows may obstruct stream channels and cause flood issues. The September 2013 rains likely destabilized hillsides and steep slopes so increased landslides and rock slides will also be possible this spring particularly with heavier or prolonged rainfall.
- More significant flooding will likely occur this spring if rain falls on the snow, rapid warming occurs and of course there is more snow between now and the melt.
- The early March snowpack in the mountains of the Big Thompson River and St Vrain Creek drainages is right up there with the highest snowpack years (in the past 35 years) of 1986, 1996, 1997, and 2011. How fast the snow melts and when, rainfall timing and amounts will also be very important. For example, in the spring of 2011 there were concerns due to the high snowpack, but the snow melted out in an orderly fashion without major issues.

- The green line on the time series graph shows the NRCS SNOTEL SWE (snow water equivalent in the snowpack) since October 2013 in the Big Thompson and St. Vrain Creek Drainages. The blue/violet lines show the 1981-2010 average/median.



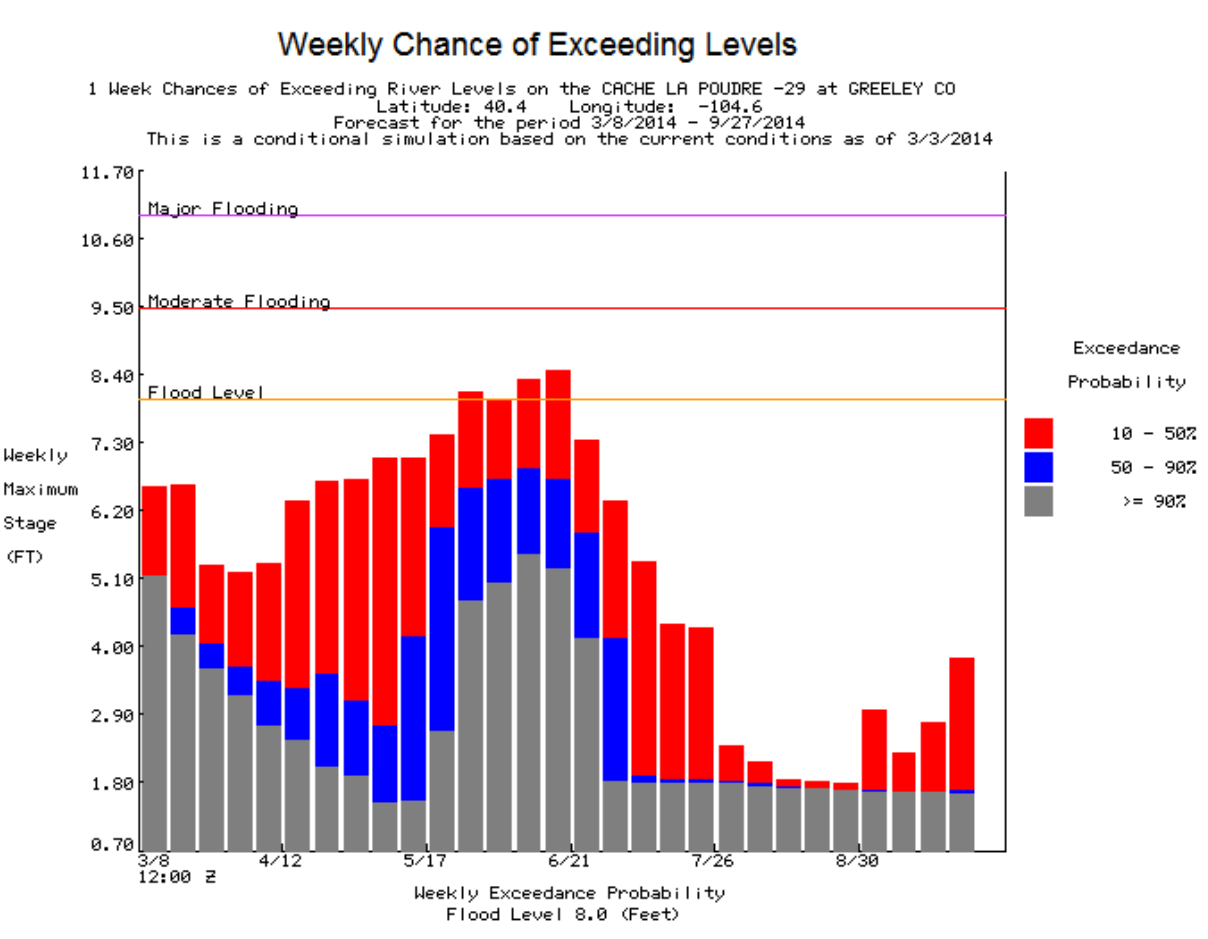


Reservoir Storage



The graph shows the percent of average combined reservoir storage (which is currently at or above average and 125% to 150% of storage last year at the same time). The combined storage is around 83% of capacity in the South Platte Basin, and 64% of capacity in the Upper Colorado River.

The NWS AHPS graph below gives the probability that the maximum stage on the Cache La Poudre River near Greeley will exceed a particular value each week from early March through September 2014. There is a 10% to 50% chance the Cache La Poudre river at this location will rise to flood stage (8 feet) late May to mid June 2014.



Graphics of probabilistic river outlooks can be found on the AHPS website at http://water.weather.gov/ahps2/. The probabilistic forecast points are marked by circles on the AHPS map. The probabilistic outlook graphics are accessible by clicking the tabs above the forecast point's hydrograph.

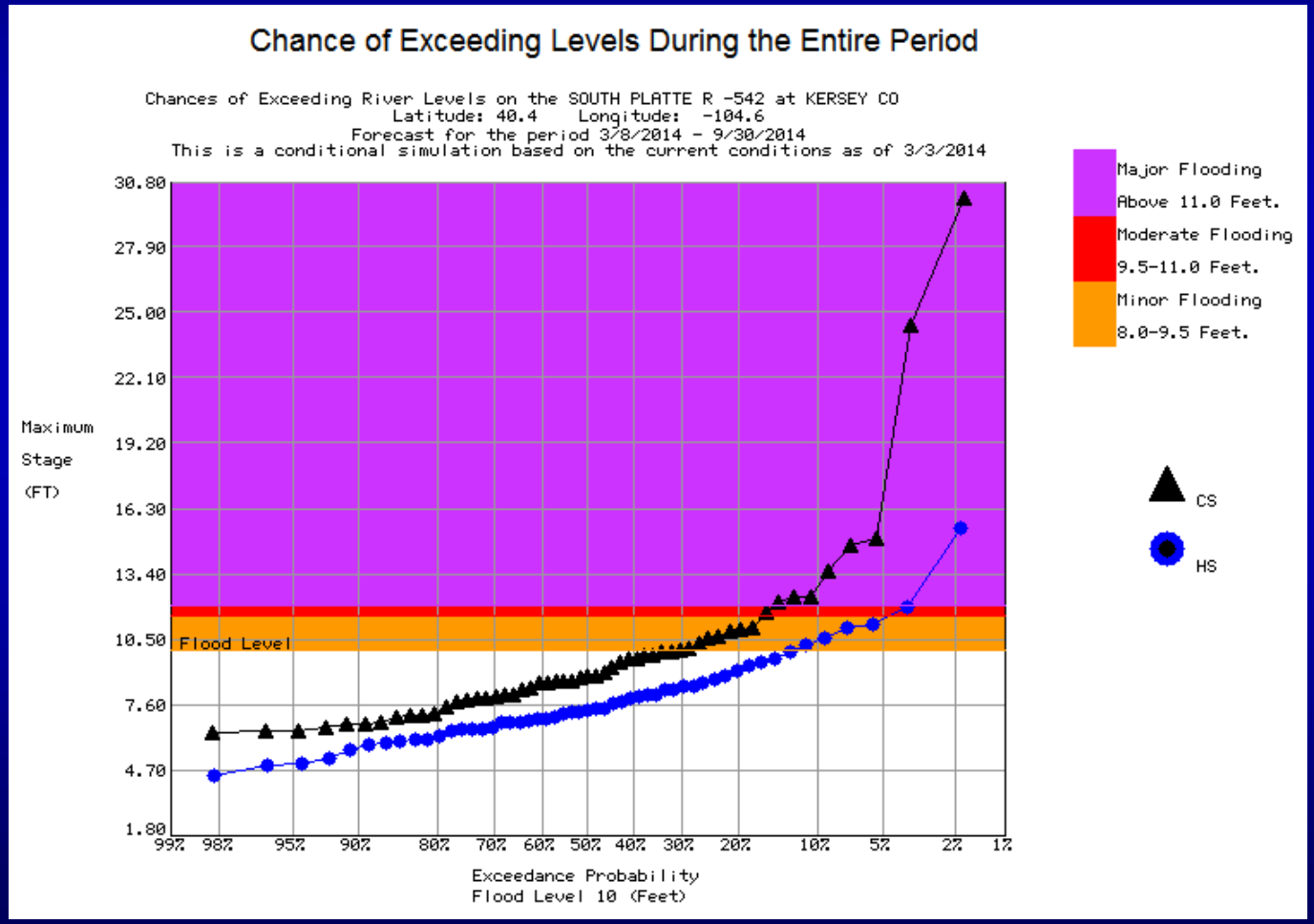
This AHPS probabilistic graph gives the chances of the stage going above various levels during the forecast period (March through September). The graph shows the South Platte River at Kersey has a 31% chance of reaching flood stage (of 10 feet) this year. In an ‘average’ year, the South Platte River at Kersey has a 12% chance of reaching flood stage. It has a 17% chance of moderate flooding this year, compared with a 5% chance in an ‘average’ year.

▲ CS = Conditional Simulation

- The conditional simulation (CS) line indicates chances of the river going above given levels based on current conditions.

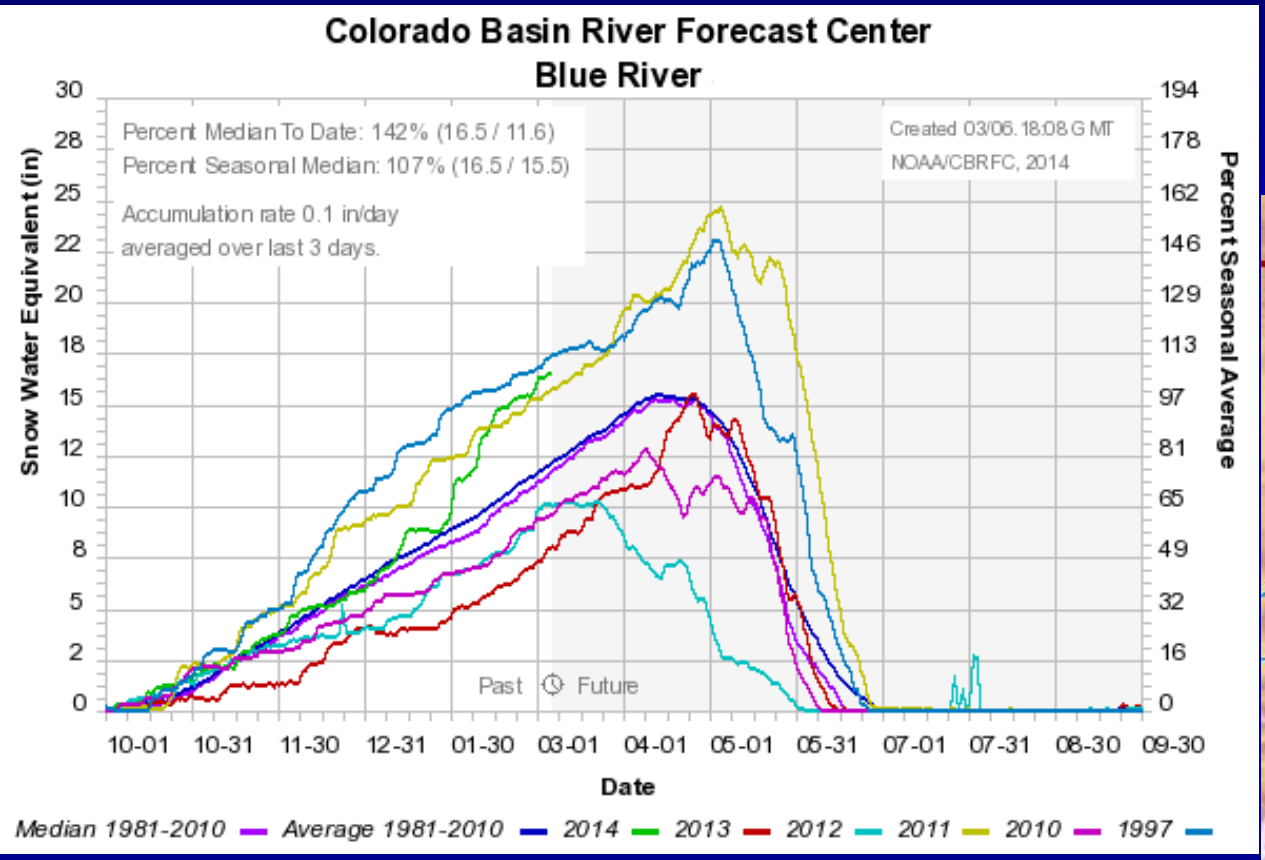
● HS = Historical Simulation

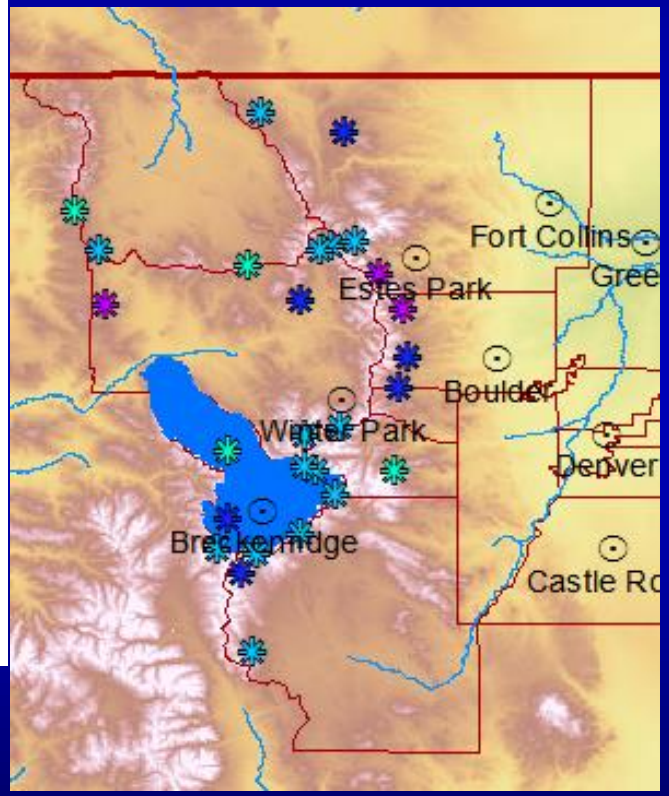
- The historical simulation (HS) line indicates the chances of the river going above given levels based on the total range of past levels.

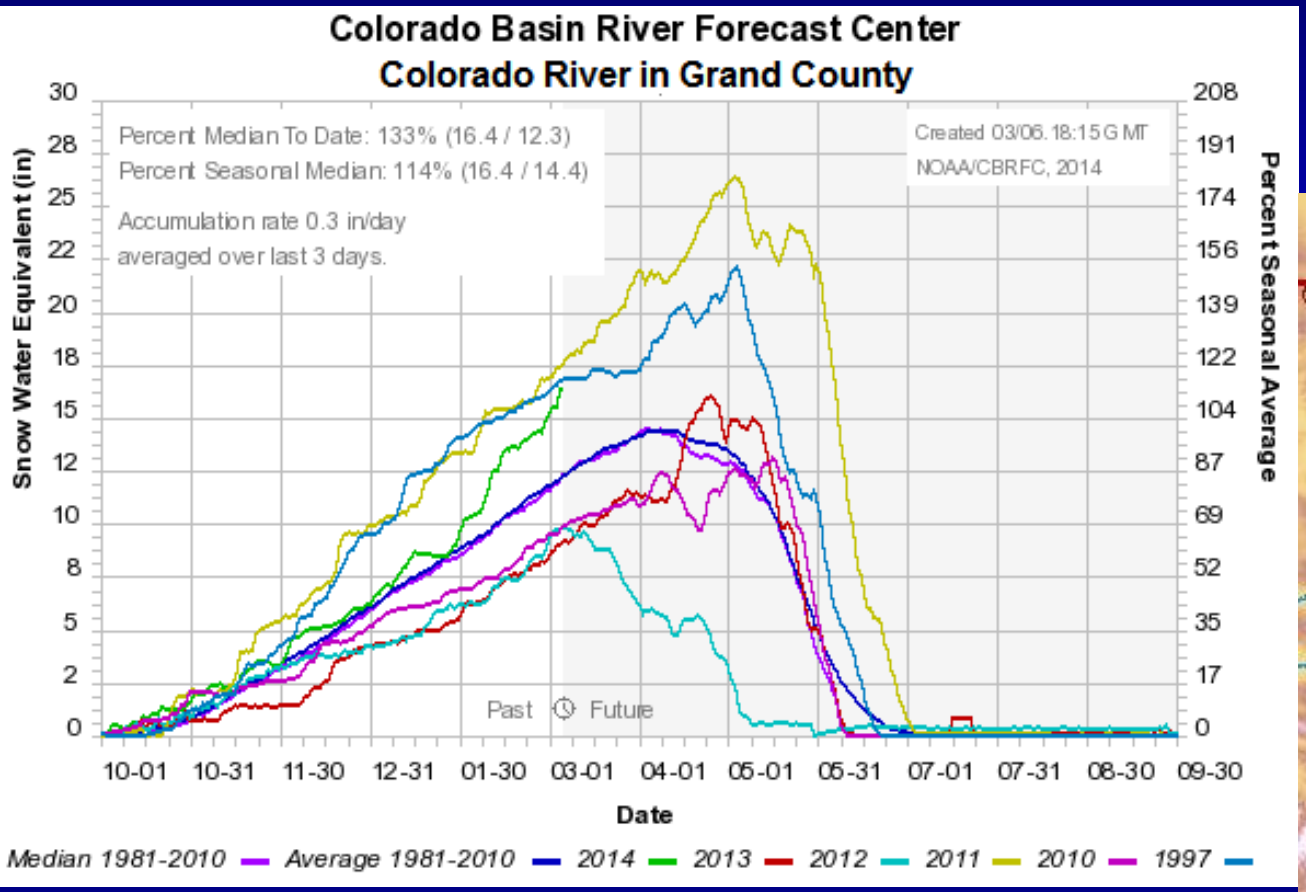


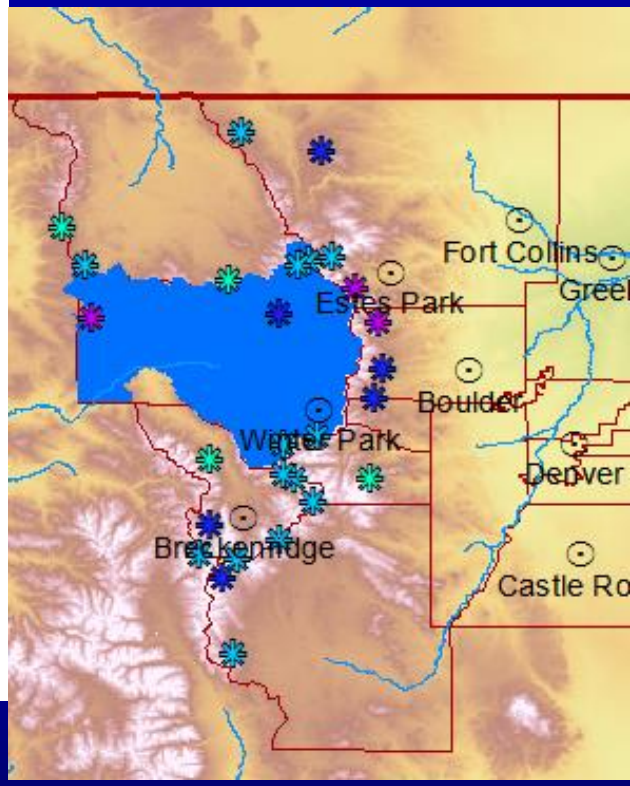
The Kersey forecast point is just downstream of the confluence of the Cache La Poudre and South Platte Rivers in Weld County.

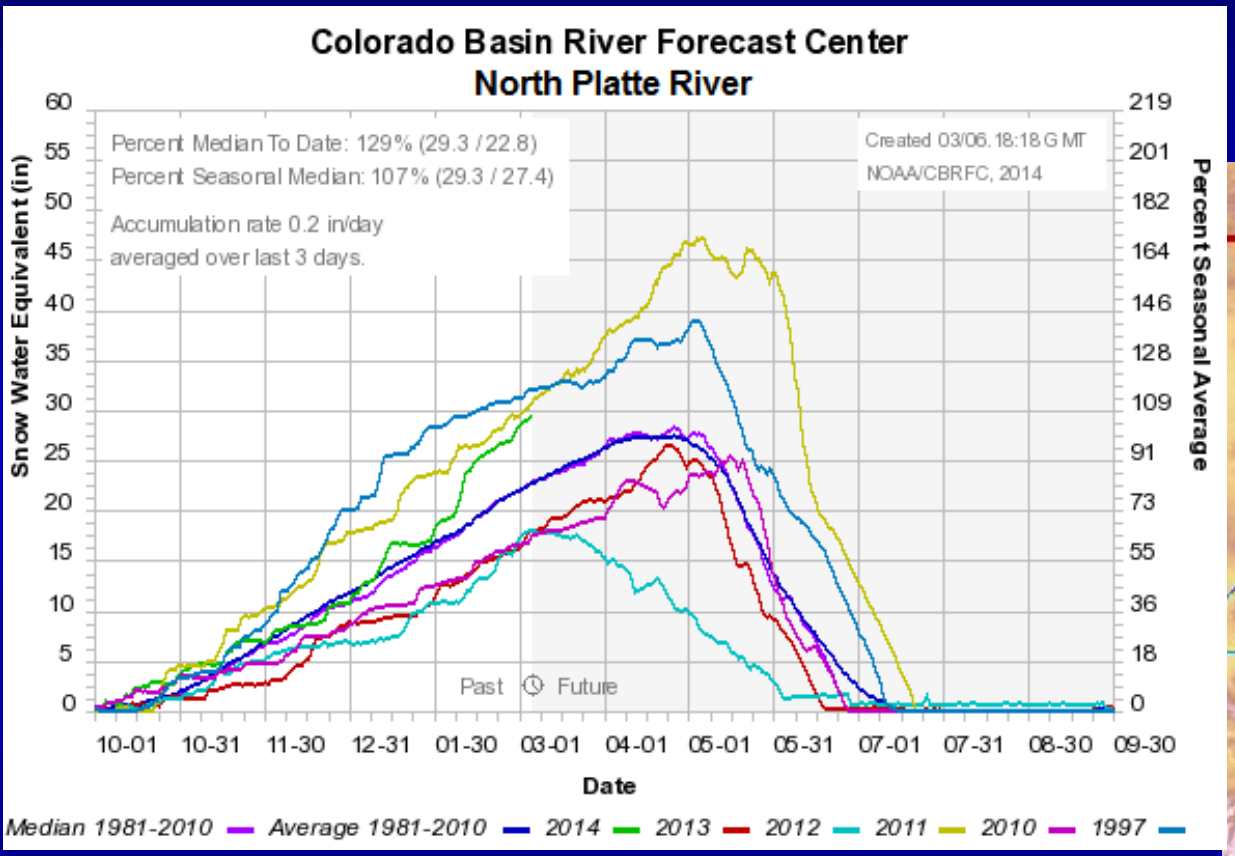
The remainder of the slides display graphs of recent years' snowpack time series in areas of north central Colorado. (Graphs east of the Divide may not include data for all NRCS SNOTEL sites. Average/median data was not available for the last 2 slides)

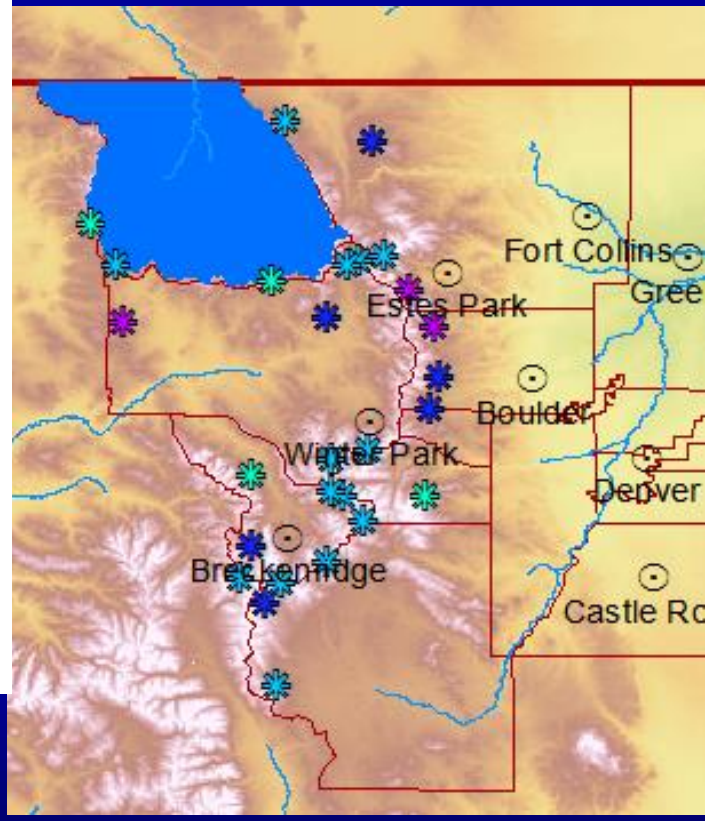


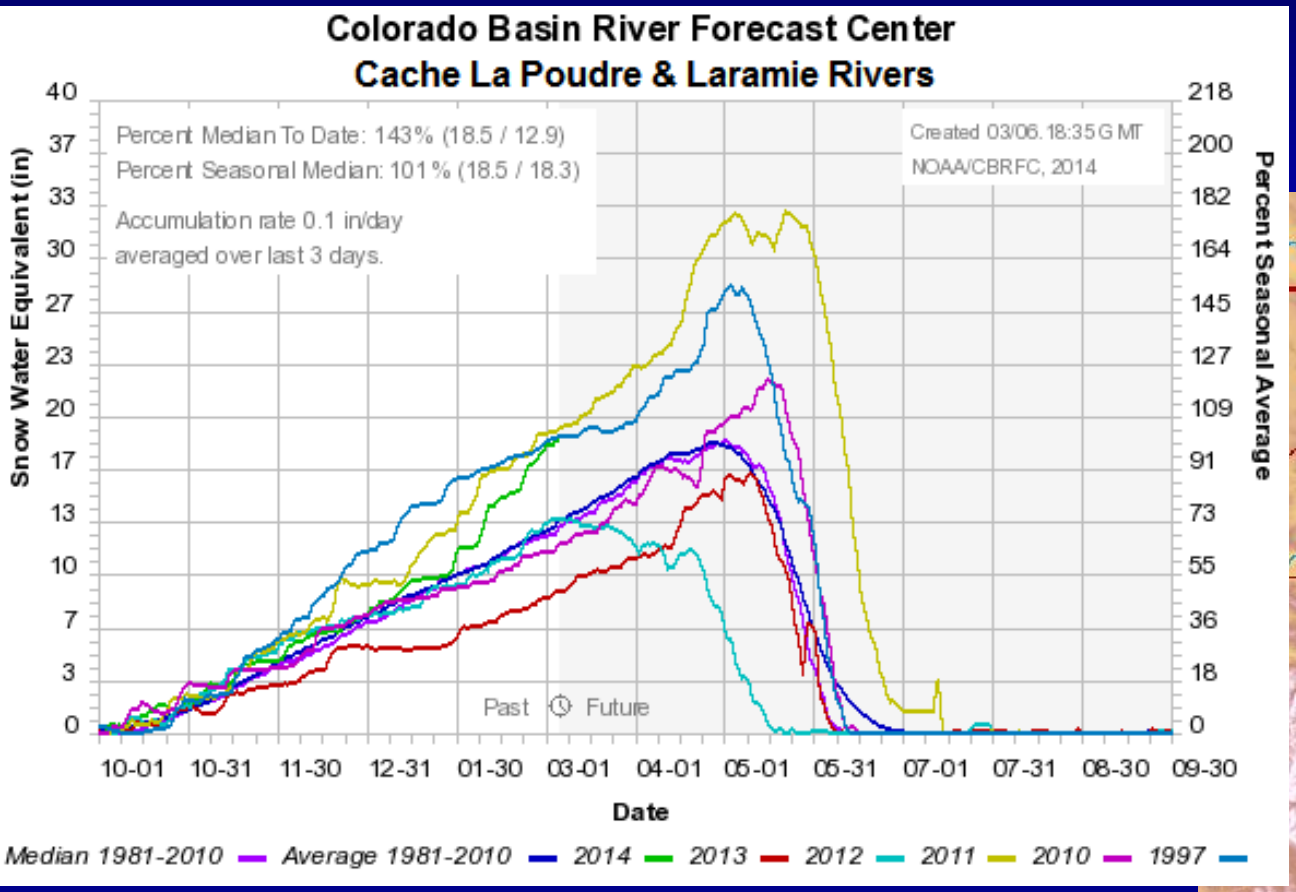


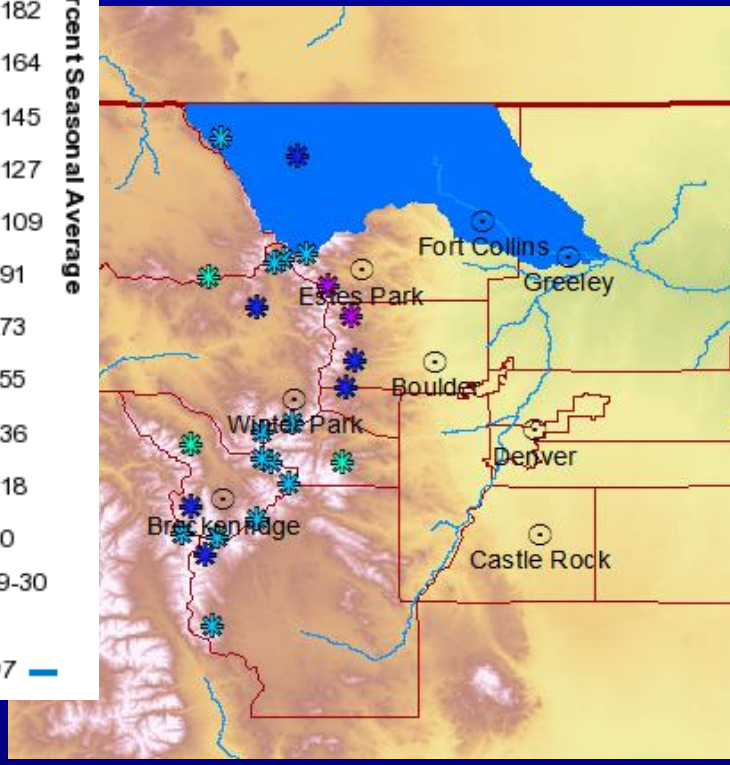

Colorado Basin River Forecast Center
Colorado River in Grand County
Percent Median To Date: 133% (16.4 / 12.3)
Percent Seasonal Median: 114% (16.4 / 14.4)
Accumulation rate 0.3 in/day
averaged over last 3 days.
Created 03/06. 18:15 G MT
NOAA/CBRFC, 2014
Snow Water Equivalent (in)
Percent Seasonal Average
30
28
25
22
20
18
15
12
10
8
5
2
0
208
191
174
156
139
122
104
87
69
52
35
17
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
Median 1981-2010
Average 1981-2010
2014
2013
2012
2011
2010
1997

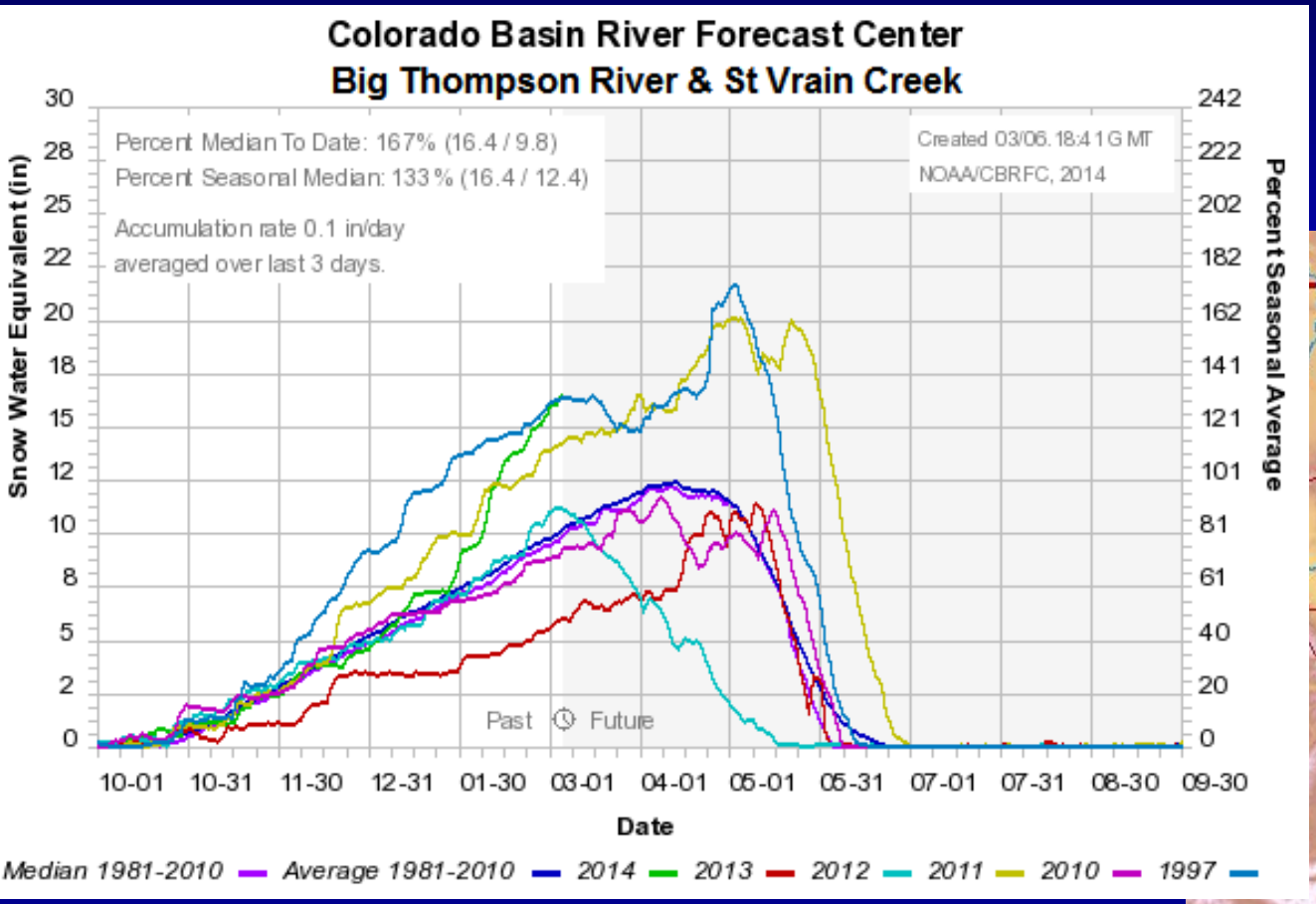

Fort Collins
Estes Park
Boulder
Denver
Castle Ro

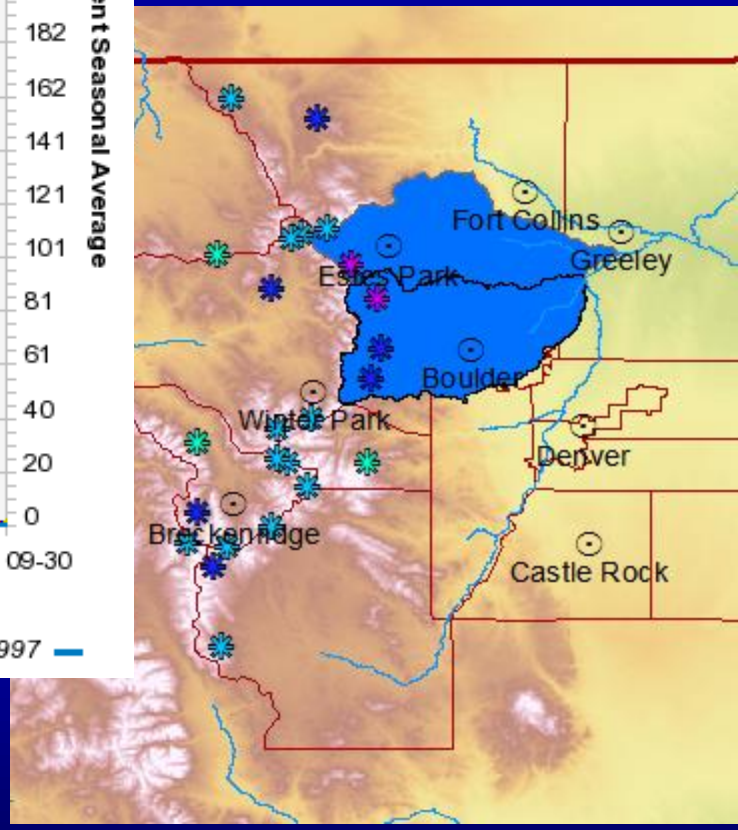

Colorado Basin River Forecast Center
North Platte River
Percent Median To Date: 129% (29.3 / 22.8)
Percent Seasonal Median: 107% (29.3 / 27.4)
Accumulation rate 0.2 in/day
averaged over last 3 days.
Created 03/06.18:18 G MT
NOAA/CBRFC, 2014
Snow Water Equivalent (in)
Percent Seasonal Average
60
55
50
45
40
35
30
25
20
15
10
5
0
219
201
182
164
146
128
109
91
73
55
36
18
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
Median 1981-2010
Average 1981-2010
2014
2013
2012
2011
2010
1997

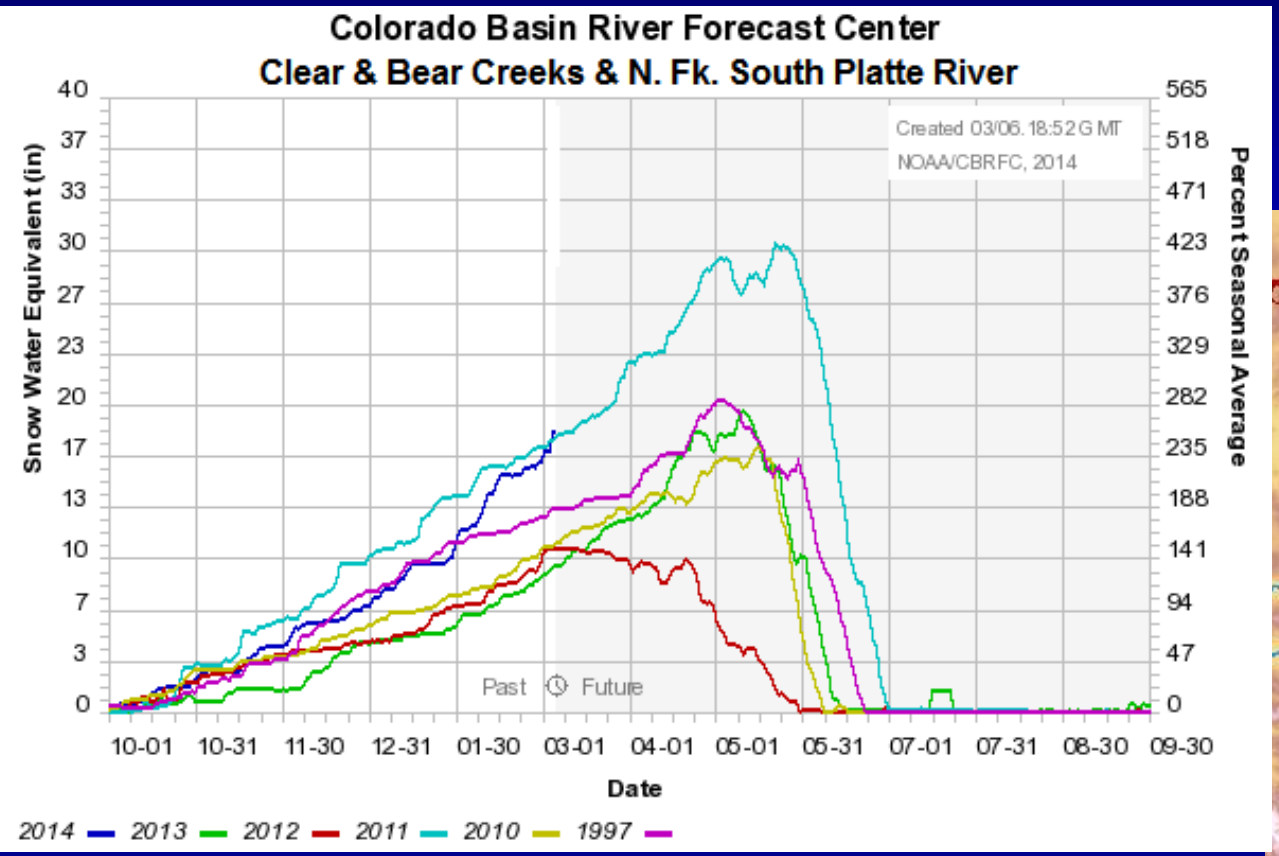

Fort Collins
Estes Park
Boulder
Winter Park
Denver
Castle Rc

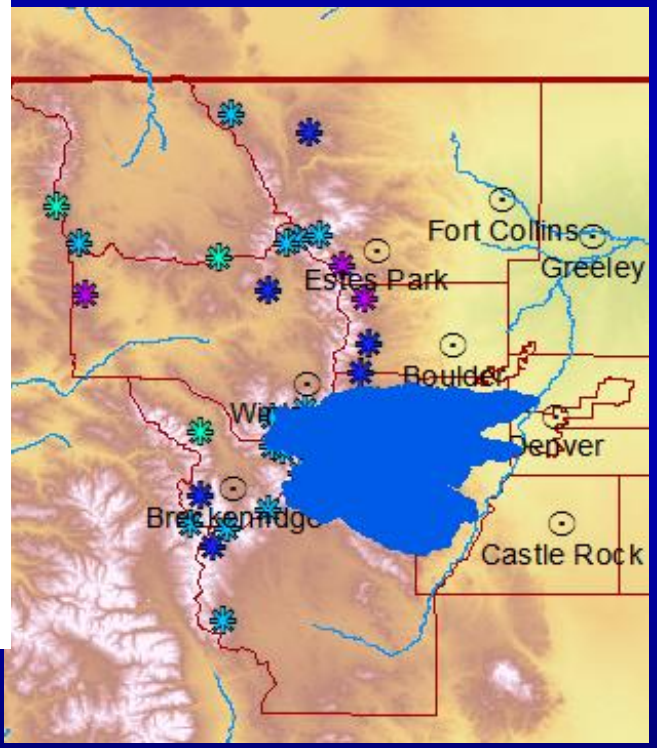

Colorado Basin River Forecast Center
Cache La Poudre & Laramie Rivers
Percent Median To Date: 143% (18.5 / 12.9)
Percent Seasonal Median: 101% (18.5 / 18.3)
Accumulation rate 0.1 in/day
averaged over last 3 days.
Created 03/06.18:35 GMT
NOAA/CBRFC, 2014
Snow Water Equivalent (in)
Percent Seasonal Average
40
37
33
30
27
23
20
17
13
10
7
3
0
218
200
182
164
145
127
109
91
73
55
36
18
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
Median 1981-2010
Average 1981-2010
2014
2013
2012
2011
2010
1997

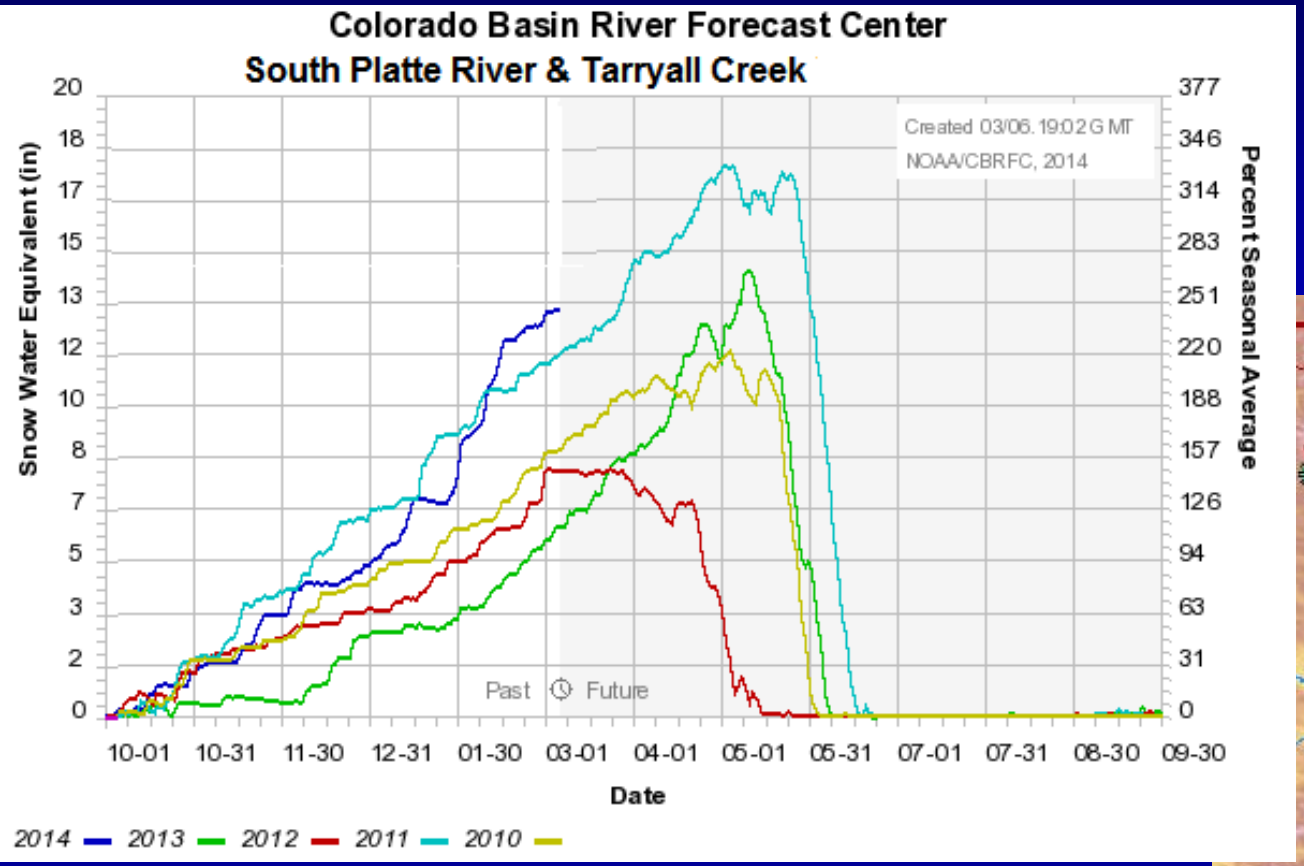

Fort Collins
Greeley
Estes Park
Boulder
Winter Park
Denver
Breckenridge
Castle Rock

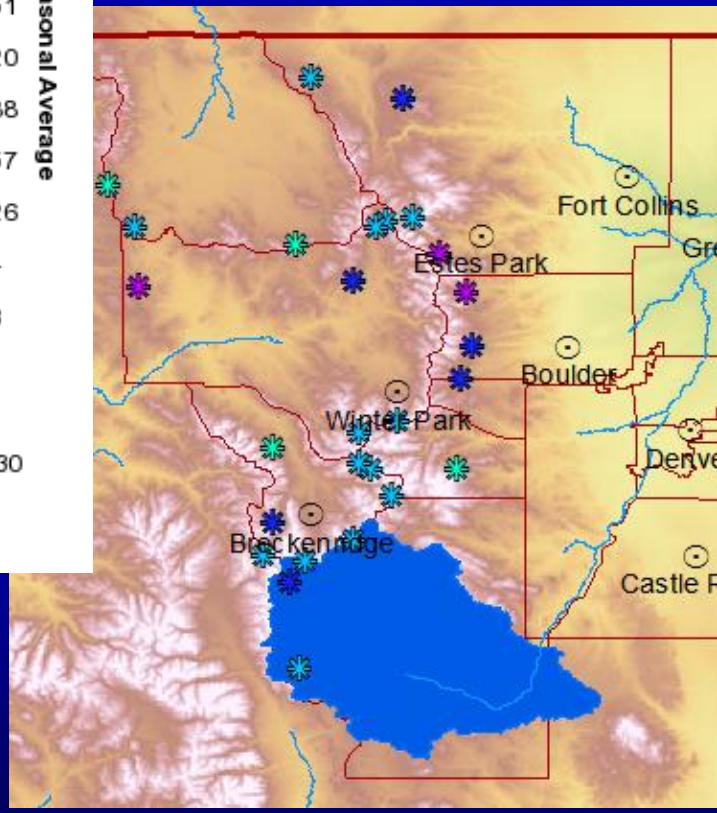

Colorado Basin River Forecast Center
Big Thompson River & St Vrain Creek
Percent Median To Date: 167% (16.4 / 9.8)
Percent Seasonal Median: 133 % (16.4 / 12.4)
Accumulation rate 0.1 in/day
averaged over last 3 days.
Created 03/06.18:41 G MT
NOAA/CBRFC, 2014
Snow Water Equivalent (in)
Percent Seasonal Average
Past
Future
Date
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Median 1981-2010
Average 1981-2010
2014
2013
2012
2011
2010
1997


Fort Collins
Greeley
Estes Park
Boulder
Winter Park
Denver
Breckenridge
Castle Rock


Colorado Basin River Forecast Center
Clear & Bear Creeks & N. Fk. South Platte River
Created 03/06 18:52 G MT
NOAA/CBRFC, 2014
Snow Water Equivalent (in)
Percent Seasonal Average
40
37
33
30
27
23
20
17
13
10
7
3
0
565
518
471
423
376
329
282
235
188
141
94
47
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
2014
2013
2012
2011
2010
1997


Fort Collins
Greeley
Estes Park
Boulder
Castle Rock


Colorado Basin River Forecast Center
South Platte River & Tarryall Creek
Created 03/06.1902 GMT
NOAA/CBRFC, 2014
Snow Water Equivalent (in)
Percent Seasonal Average
Past
Future
Date
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
2014
2013
2012
2011
2010


Fort Collins
Estes Park
Boulder
Winter Park
Breckenridge